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ABSTRACT

This report reviews the requirements for infrastructure for research in the arts and humanities in United Kingdom universities and colleges. It assesses the extent of remedial investment required and sets out the conditions needed to manage this research infrastructure on a sustainable basis. The requirements for arts and humanities research that are the focus of this report are only part of a broader picture. The report is primarily concerned with current needs, but looks at trends and developments and their implications for the infrastructure required to support them. The sections are: (1) "Introduction"; (2) "Research in the Arts and Humanities"; (3) "The Funding and Management of this Research"; and (4) "Findings on Infrastructure Needs." Appendixes contain terms of reference and a list of members of the advisory group and a report on responses to consultation. A glossary is also attached. (SLD)

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Issues paper

This report is for information only

This is a review of the requirements for infrastructure for research in the arts and humanities in UK universities and colleges of higher education. It assesses the extent of remedial investment required, and sets out the conditions needed to manage this infrastructure on a sustainable basis. The report is primarily concerned with current needs, but looks at trends and developments and their implications for the infrastructure required to support them. It makes recommendations that need to be considered in the context of ones made in the related reports for teaching and learning (HEFCE 2002/31) and for research infrastructure.

Arts and humanities research infrastructure

Report to the HEFCE by JM Consulting

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Executive summary and recommendations

Introduction

1. This report reviews the requirements of infrastructure for research in the arts and humanities in UK universities and colleges. It assesses the extent of remedial investment required, and sets out the conditions needed to manage this research infrastructure on a sustainable basis.

2. Much of the infrastructure for research in the arts and humanities is shared with teaching in these subjects, and indeed much is generic to all university academic activity (for example, buildings, services, IT networks, libraries). This report focuses on the requirements for arts and humanities research, but these are only part of a broader picture. This report draws extensively upon the evidence and analysis contained in an earlier report – 'Study of science research infrastructure', published in March 2002 by the Office of Science and Technology (referred to as 'the science report' throughout this publication). A report on the infrastructure needs of teaching will also be published by the HEFCE.

3. The physical infrastructure in higher education institutions (HEIs) supporting teaching and research is made up of buildings with an insured value of approximately £26 billion, plus equipment and contents of a further £8 billion. Chapter 3 states that, for costing purposes, approximately 6% of this physical infrastructure can be attributed to arts and humanities research. The arts and humanities also rely on other resources outside institutions including libraries, collections, museums and galleries.

4. The infrastructure for research also includes some staff (for example, technicians); and recurrent funding for items such as maintenance contracts; library materials; small items of equipment and consumables; travel; and publications.

The arts and humanities

5. The nature of the arts and humanities disciplines and research are reviewed in chapter 2. They share a common framework of the nature of scholarship and academic enquiry with the sciences. Interdisciplinary work brings the arts and humanities and the sciences together. Traditional research methods in the humanities are evolving. Increasingly research in these disciplines is taking on features of science-based research, including team working; multi-centre collaborations; use of sophisticated information technology.

6. Like the sciences, the arts and humanities make a vital contribution to the UK economy and society. In particular, research in the arts and humanities underpins the UK's leading position in the creative, cultural, and heritage industries, which are some of the fastest-growing and most important export earners for the UK.

7. This is a diverse group of disciplines. For the purposes of this study, they can be envisaged as two groupings:

   a. the more traditional arts and humanities subjects (for example, English, history, languages, philosophy, archaeology) which have by and large a common research methodology and culture;

   b. the creative arts (for example, music, dance, digital media, fashion, design) which are newer as subjects in HE and have a less well-established research profile, and often much more specific infrastructure requirements.

8. Unlike the sciences, the traditional arts and humanities disciplines rarely have any dedicated research space equivalent to the research laboratory, and there have been limited opportunities for external funding of research (this has improved recently with the creation of the AHRB). This has been associated with a culture where much research is essentially done 'in the margins of teaching' using both facilities provided for teaching, and staff time (often evenings and vacations) when students are not using the space or demanding the attention of researchers. A related aspect has been, until recently, the relatively low expectations and ambitions of research staff in the arts and humanities in terms of the infrastructure and support they demand.

9. These features are not unique to the arts and humanities, but they are more characteristic of these disciplines. They can be considered a strength in some respects (notably the close relationship of teaching and research), but they have also undoubtedly held back the development and professionalisation of research in these disciplines and the development of their full potential.

10. This pattern of working is changing as a result of the pressures of the RAE, and the work done by the AHRB. This change of culture will help to maximise the potential of these disciplines and their contribution to the economy and society. It also has implications for the level of infrastructure support required, which now needs to increase significantly.

The environment for arts and humanities research

11. In the science report, a related series of historic factors and financial pressures are discussed that have combined to create a situation in higher education where the physical assets of universities and colleges have been undervalued, and under-invested, relative to what would be regarded as good long-term asset management in a commercial business. The principal influences here have included:

    - the past public-funded culture of higher education;
    - the large number of 1960s and 1970s buildings, which are already unsuitable in many cases, and near the end of their design life;
    - perverse incentives in the way that capital and recurrent funding of universities has rewarded expansion and new development, and has not facilitated whole-life asset management;
    - recurrent funding of research below full economic costs;
    - the long-term decline in the unit of resource for teaching;

- issues about the strategic management of estates, particularly in the more traditional research universities which have been led by academic officers, and have not given priority to long-term estates strategy or to commercial property and investment skills;

- the absence of properly integrated research and resource strategies in institutions.

12. Institutions have varied in their degree of success in managing these pressures. However, perverse incentives in the funding mean that those which have practised self-help, rather than relying on or waiting for Government schemes, may now fear that, to the extent that they have reduced their infrastructure problems, they have made themselves less eligible for future funding schemes.

13. Additional factors have contributed to a situation where the degree of under-investment is probably relatively greater in the arts and humanities than in the sciences. These include:

    - lack of external sources of funding and the traditional humanities model of research discussed above have constrained the level of research activity, in particular the use of more expensive or specialist infrastructure;

    - the small size of many arts and humanities departments and their relative inability to command a high priority within their institutions, partly because the laboratory-based subjects have had health and safety legislation and other external pressures. By contrast, arts and humanities subjects have been perceived to be 'able to cope' with sub-optimal infrastructure;

    - Government policy has treated the arts and humanities differently from the sciences and social sciences and has not, until recently, recognised the scale of their relevance and contribution to national economic and social objectives;

    - some short-term problems in recent years as a result of institutions struggling to find matching funds for JIF and SRIF projects in the sciences. These have had an adverse effect on the levels of investment that would otherwise have been made in teaching and in the arts and humanities.

14. All this adds up to a picture where there is a significant requirement for remedial investment across the whole higher education generic institutional infrastructure, and the arts and humanities have probably done less well on average than the sciences. They have of course not benefited from any infrastructure investments equivalent to JIF and SRIF.

15. There have been capital funding schemes available for the arts and humanities. The science report shows that out of a total of approximately £4 billion in capital funds allocated to institutions over the past 10-12 years, approximately 30% was in principle accessible by the arts and humanities. There are examples where arts and humanities have benefited from infrastructure investments which are on a par with the best in the sciences. However, the picture is both discipline- and institution-specific, and overall there is still a significant unmet need.

Investment needed in infrastructure for arts and humanities research

16. As was found for the sciences, and for teaching, the investment needs in infrastructure for research in the arts and humanities can be grouped into five categories, which are reviewed in detail in Chapter 4. Four of them are considered below:

- Remedial capital investment, subdivides into three categories
  - **Generic institutional infrastructure**
  - **Well-found laboratory or equivalent**
  - **Advanced or specialist facilities**
- **Recurrent investment needs** – departmental funds etc

Generic institutional infrastructure

17. This includes buildings; services; equipment; libraries and ICT at the generic institutional level. It would include specific buildings or facilities such as theatres and studios which are an essential part of the infrastructure for the disciplines currently in the institution. Lack of adequate and appropriate space in which to do research is a serious constraint in the humanities, which do not generally have dedicated spaces for research. More generally, growth in student numbers and limited external funding has put severe pressure on staff rooms, graduate common rooms, studios and performance spaces and other spaces which are critical for research.

18. Generic institutional needs have been assessed in this and companion studies using a common method across all research and teaching. The findings, based on detailed assessments at 12 case study institutions, lead to a conclusion that the sum required for remedial investment in the generic institutional infrastructure for the arts and humanities is £0.5 billion. The equivalent figure for teaching is £4.6 billion, and £2.7 billion for science research.

19. This level of remedial investment will ensure that:

- there is adequate space for the current level of work;
- no buildings are in maintenance condition categories C or D, and they are fit-for-purpose i.e. functionally suitable; including appropriate estates rationalisation where necessary;
- there is no outstanding borrowing associated with these buildings;
- they comply with legislative requirements for health and safety and disabled access.

20. This remedial investment on generic infrastructure for arts and humanities should not be made in an isolated and ring-fenced way. To allow the greatest benefits of any investment, it should be made as part of a holistic institutional strategy for this physical infrastructure, and managed alongside parallel investments in the generic infrastructure for teaching and for science research.

21. Eligibility for funding should include the whole spectrum of arts and humanities disciplines. Needs for any one discipline will vary by institution, depending on

the type of research they do, and the past investment they have been able to make. Funding should be made available to all institutions on a formula basis that recognises current institutional size and research strengths. It should cover buildings and associated services and facilities, including library buildings and IT networks, but not include staffing or the purchase of library material.

Well-found laboratory or equivalent

22. The well-found laboratory is a discipline-specific requirement related to specific equipment and environments for research in addition to the space and services provided as part of the generic institutional infrastructure. In the arts and humanities this includes theatre equipment, musical instruments, music technology centres, workshops, costumes, arts and craft materials, specialist IT equipment (but not PCs and recurrent departmental expenditure), archives or collections (but not general library contents).

23. This definition excludes major capital projects (such as a theatre, library) which are too large to be regarded as departmental or discipline requirements. These would either fall within the generic institutional infrastructure (if they needed renewal), or, if they represent an extension of research capacity, might be in the advanced category (see below).

24. As discussed in chapter 4, it is not easy to assess the needs of the well-found laboratory for the arts and humanities. Reliable estimates of equipment value or need were not obtained in the timescale of this study. In the sciences, national surveys by PREST exist, and it is easier with well established streams of external funding to identify 'what would normally be expected' in (say) an RAE 5* physics department. It will be some time before such benchmarks can be used in the arts and humanities.

25. Chapter 4 quotes individual examples of need. Until there is a more robust basis for evaluating need, only a broad extrapolation can be made. On this basis, the well-found laboratory requirement for remedial investment in contents and equipment in the arts and humanities can be assumed to be about £50 million for the UK HE sector. This equates to approximately £3,000 per staff member, and is 10% of the size of the remedial well-found laboratory need identified in science.

26. This sum could be considered to be included within the remedial requirement for the generic infrastructure (rounded to £0.5 billion).

27. As part of the development of the strategies recommended below, institutions should become more aware of their equipment and facilities needs for arts and humanities research, and thus be able to provide specific estimates of need. The only other way to produce a more robust figure at this stage would be to do a national survey analogous to the ones done for science research.

Advanced or specialist facilities

28. This category covers specialist research centres and state-of-the-art facilities which are usually too costly to be provided at departmental level, or from routine research grants or contracts. These will not be needed in every research-active department or institution, but in a few national centres which are at the forefront of their discipline. As in science, they will often represent (at least partly) an advance in the national capacity for research which has the aim

of enabling UK research to remain at the leading edge of the disciplines concerned. This investment (like JIF in the sciences) is therefore partly remedial and partly developmental.

29. There is no ready method to provide an objective estimate of the scale of need here. However, there are a small number of 'big projects' which will contribute to keeping UK arts and humanities research competitive on the world stage, and to ensuring the vibrancy and development of the disciplines concerned. Such projects could include:

    - major libraries projects – to increase access to research materials by scholars across the UK;
    - humanities centres: analogous interdisciplinary research centres to those which have been created in the sciences, often using JIF or SRIF funds;
    - major performance and creative arts facilities;
    - storage and digitisation projects to provide a national research facility for UK scholars.

30. As in the sciences, such projects deserve funding on a national competitive basis to ensure that they are high quality. It would be appropriate to establish a national public scheme of a similar general nature to JIF for advances in arts and humanities research infrastructure.

31. A suitable level of funding for this would be of the order of £100 million, spread over a period of five years. This could be managed as a ring-fenced element within the equivalent scheme recommended for the sciences in the science report.

Recurrent investment needs

32. As well as these capital requirements, recurrent needs can be identified in terms of the right level and type of support to academic staff (to permit adequate time for research); technicians and other support staff; departmental expenditure on minor equipment; maintenance contracts; travel; journals and books; conferences etc. These funds have been squeezed by the recent years of efficiency gains in higher education, and in many examples, case study institutions were suffering reduced research productivity as a result. The shortfalls in this area vary greatly and a general estimate could not be made. Funding activity closer to a full economic basis would enable institutions to remedy these gaps.

33. More generally, the sector needs to be funded, and to manage its infrastructure on a basis that is sustainable and will not lead to a recurrence of this level of deficit in investment. Over the long term, institutions should be investing approximately 4% of their insured asset value on an annual basis to allow for necessary renewal and replacement of buildings and equipment. (They need to plan to spend over 5% to take into account cost inflation.) Institutions are currently spending just over 50% of this required level (see the science report).

Benefits from this investment

34. The benefits of research in the arts and humanities are discussed in chapter 2. The evidence of a need for remedial investment is summarised in chapter 4, and at one level it is simply good stewardship of national resources to manage and maintain the infrastructure for the arts and humanities in a condition where it can make a full contribution to the Government's aims for higher education.

35. On a positive note, it is clear that the UK's leading position in the creative, cultural and heritage industries is underpinned by our performance and reputation in scholarship, teaching and research in the arts and humanities. Enabling universities and colleges to realise the full potential of their work in these disciplines can make a major contribution to exports, to employment, to the development of UK-based industries and professions, and to the broader economic and social objectives of the Government (see chapter 3 for details).

Recommendations: towards a sustainable infrastructure

36. These recommendations need to be considered in the context of those made for the science research infrastructure, and for teaching. They are intended to provide the conditions for achieving the benefits discussed above and maintaining the infrastructure on a sustainable basis, so that further emergency remedial programmes should not be required.

Recommendation 1. A policy initiative, supported by Government and the funding councils, is needed to clarify and support the responsibility of institutions for planning and investing to maintain their own physical infrastructure on a sustainable basis.

37. As part of this, institutions should be required to assess their own infrastructure needs, and to prepare an asset management strategy, including a five-year plan for remedial investment in both generic and research infrastructure, clearly linked to their estates and research strategies. Submission of such a strategy should be made a condition of the remedial capital funding in Recommendation 2, but funding councils should not interpret this as requiring detailed scrutiny of institutions' plans, which would create extra work for both institutions and the funding councils.

Recommendation 2. The Government should provide a capital funding scheme, allocated to institutions on a formulaic basis and spread over several years to address the £0.5 billion (2001 prices) remedial backlog investment in existing infrastructure (generic plus well-found laboratory or equivalent) identified above.

38. The funding should be allocated on a broadly similar basis to SRIF, i.e. selectively by formula according to research volume and quality. Unlike SRIF, institutions should not be required to provide directly matching funds as the effect of this would be to inhibit or delay the necessary remedial investment.

39. Value for money for this funding would be achieved by:

    a. the requirement for a holistic institutional strategy for infrastructure linked to academic strategies;

b. the flexibility of the allocations – like SRIF, institutions will be able to target their own priorities and will therefore be motivated to stretch the money available;

c. the contributions from other sources which institutions will need to build into their five-year investment plans. These conditions should be interpreted in a flexible way by the funding councils with the aim of maximising the support to the research infrastructure rather than seeking any particular narrowly defined conditions to be met by institutions.

Recommendation 3. The Government should facilitate action to improve the recurrent funding of research so that, over time, institutions become capable of covering the full costs of the research work they do, including sustainability of their infrastructure.

40. This recommendation is intended to promote a process by which all interested parties, including the main funders of research, discuss how, over time, the funding of research can be put onto a sustainable basis, in which universities are not required to subsidise the research they carry. In the sciences, the recommendations of the Quinquennial Review of the Research Councils, just completed, appear to envisage a suitable mechanism for this (the funders forum).

41. It is not anticipated that this recommendation will lead to an overnight change, but the critical first step is to obtain recognition of the damaging effects of the 'low-price culture' and a recognition that universities are acting in the national interest when they take steps to change this. The debate and dialogue which will hopefully develop as a result of this report and of the actions under Recommendation 1 will significantly assist this process.

Recommendation 4. To address the evolving needs of UK capability in advanced research in the arts and humanities, a more selective project-based scheme is needed for a limited number of advanced research facilities, perhaps at a level of £100 million over a five-year period.

42. This is a different purpose from sector-wide remedial investment, and the scheme could appropriately be designed on a different basis. However, any bids to this scheme could sensibly be reviewed in the light of the five-year strategies being developed by institutions under Recommendation 1. The funds could be released in response to proposals submitted by institutions, perhaps invited to do so in particular disciplines where the AHRB assess that there is a national interest in improving the research capability of the UK.

43. This is the 'premium end' of research, and institutions operating at these levels would be expected to generate some funds to re-invest in their own infrastructure. It would therefore be reasonable to expect institutions to make some matching investment in these projects, as they did for the later rounds of JIF in the sciences.

1 Introduction

Terms of reference

1.1 The purpose of this study was to review the higher education infrastructure for research in the arts and humanities, and in particular:

- to review the adequacy of university and college infrastructure to support research in the non-science fields;
- to define and measure the size of any investment gap in this infrastructure;
- to identify the factors which contribute to institutions' investment decisions in these areas and their relative importance;
- to draw out policy recommendations for the future.

The science report

1.2 This study on the investment needed for research infrastructure in the arts and humanities was commissioned by the HEFCE in collaboration with Universities UK and the Standing Conference of Principals (SCOP) in June 2001. The study was carried out in parallel with a study of the infrastructure for teaching. This is covered in a separate report, also published by the HEFCE (referred to in this document as 'the teaching report').

1.3 These two studies were commissioned to follow on from, and to draw on, the methodology and analysis of a study of the HE infrastructure for science research. The report from that study, 'Study of science research infrastructure', was published in March 2002 by the Office of Science and Technology and can be viewed on its website www.ost.gov.uk. This covers generic institutional infrastructure as well as infrastructure specific to science research. It contains evidence and analysis which is of direct relevance to arts and humanities research (and to teaching) which is not replicated in this report. Throughout this publication 'Study of science research infrastructure' is referred to as 'the science report'.

Study method

1.4 The work done in this study included research and discussions with a range of individuals and groups. It has drawn upon discussions at 23 HE institutions. Visits were made to 18 institutions. The fact that data and evidence were provided by a pool of institutions means that a degree of confidentiality has been maintained.

1.5 JM Consulting issued a consultation paper on the two research studies in September 2001 and received responses that related to the arts and humanities from approximately 50 institutions. A summary of these is included in Appendix B.

1.6 The work was guided by an advisory group, listed in Appendix A.

Scope, definitions and terminology

1.7 For this review, research infrastructure is defined to include the following:

- buildings and plant and associated services;
- equipment;
- IT, libraries and related information resources;
- technical support staff and services.

1.8 In this study the time of academic staff that is or should be available to carry out arts and humanities research is not covered.

1.9 Unless otherwise stated, all references to the Research Assessment Exercise (RAE) results are to the 1996 results. Those for 2001 were published after the research for this report was undertaken.

1.10 A glossary of terms is provided at the end of this report.

The report

1.11 This report should be read in conjunction with the science report. This report on arts and humanities infrastructure is a summary of the background and issues specific to infrastructure needs for research in the arts and humanities, and includes all the findings and recommendations. The science report provides a detailed review of background information, data and analysis on the generic university and college infrastructure which underpins both research and teaching. It therefore forms much of the evidence base for this report and the teaching report.

2 Research in the arts and humanities

The arts and humanities disciplines

2.1 In the past, the term 'arts' has sometimes been used to distinguish all the subjects which were not 'the sciences'. These include some long-established arts subjects such as painting, music, drama and a broad group of humanities subjects including history, English, religious studies, classics, literature, and modern languages which can be said to form the core of defining and understanding our culture and identity. These arts and humanities subjects are familiar to us all through study at school, and they have a direct impact on our daily life in education and culture. Scholarly work in these subjects frequently leads to outputs such as books, lectures, films, performances, TV and radio programmes which are directly enjoyed by the public and may become commercial products.

2.2 In recent years there has been a significant growth in a subset of these subjects which could be called the creative arts (for example, design, fashion, digital music, theatre, media). These draw on some of the same roots as the classical arts and humanities subjects, but they are more practice-based and their research outputs often manifest differently from the more traditional subjects.

2.3 All the arts and humanities subjects share a common academic framework with the sciences. Notions of originality, of breadth, of altruism, of publication and peer review, and norms of academic behaviour (on plagiarism, and referencing for example) underpin all scholarship across the arts and sciences. It is increasingly the case that multi- and inter-disciplinary work crosses barriers between the arts and sciences as well.

2.4 It is widely accepted that research in the arts and humanities has been significantly under-funded relative to the sciences. This has been associated with a number of factors including the perceived low cost of much humanities research (a traditional individual model of scholarship has been dominant in some disciplines), and the relatively less confident, developed and ambitious research culture in some of these disciplines, which is in turn associated with a much lower (relative to the sciences) level of external research funding. This is all changing, driven by a number of factors which include:

- the work of the AHRB in raising the expectations and professionalism of externally funded research;
- the huge growth of, and commercial interest in, the creative arts disciplines;
- developments in the quality and management of research which are occurring in all disciplines, but particularly in the arts and humanities.

2.5 The arts and humanities therefore cover a wide range of disciplines with differing characteristics, and which are themselves changing significantly. It is pertinent to note the ways they differ from the sciences, but also to recognise that there are elements of common academic principles and processes which apply across the arts and the sciences.

The importance of research in the arts and humanities

2.6 It is increasingly being understood that the arts and humanities make a significant contribution to the UK economy. The cultural and creative industries are rapidly growing in importance and are fields in which the UK has a world-class reputation. Scholarship and research in the arts and humanities subjects is a vital underpinning to this reputation, and to the continuing success of these industries as an export generator for the UK economy.

2.7 A report by a senior government advisory group gives one example (Imagination and Understanding: A report on the Arts and Humanities in relation to Science and Technology, July 2001, The Council for Science and Technology):

> 'Research in the arts and humanities is involved in multiple ways in the economic future of the UK. Universities and their research and scholarship are in the first place a highly successful and internationally competitive UK industry, in which the arts and humanities have a very substantial role. Scholarship in the arts, humanities and social sciences, like scholarship in science and mathematics, is of national and international value for many different reasons. It is (or can be) a way to understand the world, and to improve the human condition. But it is also at the heart of one of the largest of all global industries, and an industry which is expected to grow rapidly in the coming decades, and to be transformed radically by new technologies.'

2.8 Arts and humanities research is of continuing importance to the 'creative industries' in a wider sense, including entertainment, design, software, advertising and publishing, which the Department for Culture, Media, and Sport's Creative Industries Task Force estimate to employ more than 1.3 million people, with revenues of some £112 billion per year (Department of Culture, Media and Sport, Creative Industries Task Force Mapping Document, 1998).

2.9 'There is a further and even more general economic role of research in the arts and humanities. If the new economy is a "disruptive and radical change" associated with information and communication, then the relationship between the arts and humanities and the sciences is at the very heart of future economic growth.' (David Potter, 'The New Economy: Fact or Fantasy?' The Worshipful Company of Traders: Tacitus Lecture, 2001)

2.10 A report commissioned by the AHRB (The impact of research funded by the AHRB, JM Consulting, March 2001) identified ten main benefits of a healthy academic base in arts and humanities:

a. adding to human knowledge, training minds and stimulating scholarship;

b. providing rigour and evidence for education and policy (particularly in areas which raise ethical, moral and social issues such as surrogacy, mental illness);

c. helping to establish and communicate a sense of national identity and helping citizens to understand their culture and to engage in society in a responsible and constructive manner;

d. acting directly to sustain and underpin a profession or industry which provides employment, economic activity, and exports (for example, librarians, archaeologists, performing artists);

e. leading to the development of technology, techniques, skills and artefacts which can lead to the creation of new products, industries and generate employment, economic activity and exports (for example, new visual media, fine art, interactive software);

f. creating books, lectures, broadcasts, performances etc (cultural outputs) which are sold to the general population and often exported;

g. contributing to the strength, reputation and economic viability of UK universities and colleges – enhancing the learning experience of students, attracting researchers and students from abroad, leading to a range of consultancy and advisory services, creating economic activity around the universities;

h. helping to understand and celebrate cultural differences and thereby to foster tolerance, social inclusion, and participation in society;

i. challenging and shocking the status quo in a way that has led to important social reform;

j. acting as an instrument of cultural diplomacy.

2.11 Institutions have recognised there are significant benefits in having a healthy academic base in arts and humanities. Many have identified meeting the needs of emerging local industry and of broader social and economic development as part of their mission. This requires both teaching and research in those disciplines.

The nature of research in the arts and humanities

2.12 The fundamental purpose of research in all disciplines is the advancement of knowledge and understanding. As in the sciences, this fundamental research in the arts and humanities also feeds more applied research, often linked to the development of performance, techniques and artefacts, which can generate new economic activity and wealth for the nation.

2.13 The nature of research and advanced study in both the arts and humanities is such that it leads to:

- critical thinking and analysis based on evidence;
- ability to base understanding on difficult and often fragmentary evidence;
- risk-taking, tolerance of ambiguity and different views of the world;
- a deeper understanding of 'where we come from' in terms of culture and behaviour.

Humanities

2.14 Humanities includes cultural studies; languages and literature; linguistics; classics and ancient history; archaeology; history; the history of art, architecture and design; library and information management; philosophy; and theology, divinity and religious studies.

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2.15 Its features include:

- like the sciences, the humanities are seen as essential core disciplines for a university;
- in the past, research has often been characterised by individual academics usually working alone with modest requirements for infrastructure beyond access to libraries and collections, and adequate time and finances to travel, to attend conferences etc;
- this model is only one approach to research, and the research culture is changing. There is increasing experience of methods already well-established in the sciences including team working, collaboration, units and centres, use of modern technology including sophisticated methods for information collection, retrieval and analysis;
- many of these disciplines also have a 'scientific or technological end' – for example, archaeology; linguistics; music; and so different departments may have differing infrastructure requirements depending upon their particular focus;
- in other disciplines it is still true that 'the library (in the broadest sense) is our laboratory';
- there are close linkages between research and teaching. Each feeds into the other. These linkages are an academic feature, not an artefact of infrastructure or funding, but they have the effect that students might be taught using the same facilities, equipment, texts, materials, etc as are being used for current world-class research by their tutors;
- compared with the sciences, it is more difficult to separate much of the infrastructure required for teaching from that for research – particularly in terms of the importance to research of libraries and academic offices.

Creative arts

2.16 Creative arts includes fine art, crafts, design, fashion, film, music, performing arts, publishing, software, television and radio. These are rapidly changing disciplines. As with 'science' or 'engineering' they do not comprise one cohesive discipline or field of work. Those in some of the younger arts disciplines believe that academics from more traditional disciplines do not always understand or respect the nature of research in the creative arts. The expectations of research assessment and the measures of research outputs which are accepted in the humanities (and the sciences) may be less appropriate in the creative arts, and it is corresponding more difficult to assess quality and infrastructure requirements.

2.17 Some features of the creative arts disciplines include the following:

- compared to the humanities, many of the arts are relatively new academic disciplines, and do not have an established research tradition. Research is important, but may not yet have reached a state where the requirements are a matter of common agreement;
- their transfer to business and industry can be direct and have a significant impact on the creative economy. Much of the research is applied in this sense, and it is correspondingly difficult to obtain funding from the normal academic sources;

- some disciplines require significant infrastructure (studios; theatres; musical instruments; equipment for making artefacts; digital and media technology) and not all institutions can expect to have these. Their presence or absence may determine whether these disciplines are present at all, or the type of work done in them;
- the notion of practice is important, and is often closely linked to research;
- much of this practice-based research is done off-campus, sometimes in the artist's home, sometimes in galleries, exhibitions, shows etc;
- many research-active staff are part-time and hence have a different relationship to the institution.

The changing nature and requirements of research

2.18 Research in the arts and humanities is evolving from a model where much of it used to be seen as an extension of scholarship (and was essentially constrained to using resources provided for teaching) to one more similar to the sciences, notably: collaboration across institutions and disciplines; work in teams; suitable accommodation for group meetings, often heavy use of IT; and, in some disciplines, need for some specialist facilities and equipment.

2.19 The traditional model will no doubt continue alongside these new approaches, but the funding (and management) of research in the arts and humanities needs to change to recognise the new realities.

2.20 At present, there are serious barriers to realising the potential, associated with (for example):

- space problems: trying to do research in the margins of the space provided to students and teaching is not stimulating or facilitating good research (for example, seminars may have to be held in evenings or at weekends because rooms are not available at other times);
- the lack of dedicated research space damages the environment for research staff and students, and leads to loss of researchers;
- many researchers make up for poor facilities by creating their own at home (study, studio, workshop etc). This perpetuates the impoverishment of the institutional facilities available to other staff and students, and sometimes converts what might be institutional research into private research with consequent financial loss to the HE system;
- the low expectations of staff: a culture of 'excellence in poverty' has developed but this leads to sub-optimal performance, and lowered expectations and ambitions for the future.

2.21 However:

> It is these new models of research that will 'transform arts and humanities research from a cottage industry to a fully professional, internationally competitive enterprise. This is essential in our rapidly globalising higher education systems if the UK is to sustain its very high reputation for arts and humanities provision, and increasingly to attract students from elsewhere either in person or 'virtually'. The alternative is UK higher education as a cultural and economic backwater'
>
> (consultation response 1; from research groups in two institutions)

2.22 More generally, there is scope to build on the research capability in many of these disciplines, with closer collaboration between them, and with science research. Information technology is 'breaking down the barriers' between these disciplines – for example, there is a synergy between engineering and business, with markets needing a mix of creative, technical and business skills and techniques. Research in areas such as contemporary art and digital communication increasingly combine elements of arts and sciences.

2.23 One example is a researcher in robotics carrying out very advanced work with dancers ('potential to be used by the US military'). The project was experiencing problems of funding, with Research Councils and AHRB having difficulty in funding the arts/engineering work. Institutions commented on the necessity – post-BSE and post-foot and mouth, and in the age of cloning and other challenging societal developments – to close the gap between the scientists and the public. Links between philosophy and medicine, law and computing, law and medicine, education and computing, were all seen as vital in this.

2.24 This has been recognised by the Government, and, following the 'Imagination and Understanding' report' referred to at paragraph 2.7, the AHRB is developing into the Arts and Humanities Research Council. One of the aims is to 'facilitate imaginative interdisciplinary research'. Another aim, directly relevant to this study, is: 'the new arrangements will hopefully help to ensure 'that arts and humanities research has access to the infrastructure... required to participate in outstanding scholarship and outstanding innovation.'

3 The funding and management of this research

3.1 This section considers the volume, funding and management of research in the arts and humanities.

Recurrent funding for these disciplines

3.2 In the arts and humanities, there have been fewer opportunities for external research funding than in the sciences. To a large degree, research (other than that evidently requiring equipment or specialist facilities) has been assumed to be done on the back of infrastructure provided for teaching. There has been external support from the British Academy, Leverhulme Foundation and others, but, relative to the sciences, this has been very small. The welcome advent of the AHRB is changing this, and funding councils' infrastructure funding through QR is increasing, but the relative levels of support, and general availability of external funding, remain much less than in the sciences.

3.3 The main sources of external funding in recent years have been the British Academy then the AHRB (since 1998) and charities, plus an allocation within the funding councils' QR block grant for research.

3.4 On the Research Council side the situation has been improving considerably in recent years. The AHRB's programme budget has increased from approximately £40 million in 1999-2000 to £55 million in 2001-02, and is projected to rise to more than £70 million by 2003-04 – to support research projects and postgraduate awards. 'This figure may be compared with a science budget of £1.4 billion, the £850 million allocated by Research Councils to HEIs, or the £70 million budget of the ESRC, which has responsibility for a similar number of researchers in the social sciences.' (source: AHRB, Spring 2000).

3.5 Charities have also been significant funders of research in the arts and humanities, with notable contributors being the Sainsbury Family Charitable Trusts, the Leverhulme Trust, the Wellcome Trust (history of medicine). In 1998-99 the total research funding from charities in these disciplines was approximately £13 million out of a total of approximately £360 million charitable funding of research in HEIs (figures for England only; source: HEFCE 02/07).

3.6 On the funding council side, 15% of the funds allocated in the block grant for research in all subjects is allocated for arts and humanities (HEFCE, 2001-02 mainstream QR). The amount that is actually spent to support them, however, is decided by individual HEIs.

3.7 Taking all external funding together, arts and humanities external research funding comprises 2.6% of total research grants and contracts in UK HE (see Figure 1).

Figure 1 **External research funding of Arts and Humanities disciplines**

cost centre	£ 000
librarianship, comm. and media studies	2025
language based studies	4921
humanities	13800
archaeology	5750
IT and systems	14336
modern languages	1691
design and creative arts	5930
Total arts and humanities	48453
Total all research grants and contracts	1835000
Arts and humanities as a %	2.6%

(note: arts and humanities is assumed to exclude computer software engineering)
Source: HESA FSR Table 4 research grants and contracts UK 1998-99

3.8 Figure 1 shows that the total of research grant support for arts and humanities disciplines is approximately 3% of the total for all disciplines, while the volume of work (in both teaching and research) in terms of staff numbers involved is closer to 15%, as shown in Figure 2.

Figure 2 **Academic staffing levels**

cost centre	no. of permanent staff
librarianship, comm. and media studies	771
IT and systems	1934
language based studies	2882
humanities	4201
modern languages and linguistics	1677
archaeology	361
art and design	3477
Total arts and humanities	15303
Total all academic staff	112374
Arts and humanities as %	14%

number of permanent academic staff in each discipline group.
Source: 1998-99 HESA stats collated by S. Morgan of AHRB

3.9 A high proportion of these staff are engaged in research. In the 1996 RAE almost 48,000 staff were classified as research-active in all subjects. Nearly a quarter of them were in fields (UoAs) that are now under the aegis of the AHRB. 31% of staff in departments which were ranked of international standing (5 and 5*) were in these fields (source: AHRB).

Activity costs

3.10 Implementation of the Transparency Review will inform what percentage of activities in arts and humanities departments are research (as distinct from teaching). However, robust data at this level is not available. Across the sector, 42% of institutional costs could be related to research (based on English Transparency Review returns in July 2001, covering both publicly funded and non-publicly funded activities, ignoring Other activities). Of this 15% might be arts and humanities research (based on the proportion of HEFCE QR allocated to arts and humanities disciplines. QR allocations are volume, quality and cost weighted). This would imply that arts and humanities research might comprise 6% of total teaching and research infrastructure costs in institutions.

3.11 This picture is made more complex by the particularly close relationships between scholarship and research and teaching in the arts and humanities. This means that in the early years of the Transparency Review, these figures may be less robust than those for science.

The value of arts and humanities infrastructure

3.12 The UK HE estate (non-residential) is currently valued at about £26 billion (buildings) and £8 billion (equipment). This is described in the science report (in particular, paragraphs 2.1.7 and 2.3.31). Most of this is generic to research and teaching, not specifically arts and humanities research.

3.13 Of this, 6% can be attributed to arts and humanities research (the science report, paragraph 2.2.32). This would lead to a total value of £1.6 billion (buildings) and £0.5 billion (equipment) that is attributable to arts and humanities research.

Capital funding

3.14 In the science report (Appendix C), 30 capital funding schemes were analysed from the funding councils, Government and Wellcome Trust over the last 10-12 years. A total of £4 billion was made available purely for capital infrastructure – buildings and equipment (this does not include research centres or capital infrastructure funded through charitable, Research Council or AHRB project or programme grants, nor HEFCE formula-based annual capital allocations). Only the RSLP, £30 million, was specifically aimed at arts and humanities research.

3.15 Some SRIF funding did benefit arts and humanities disciplines, particularly combined research groups (music/engineering, industrial design/mathematics) and some archaeology departments. JIF/SRIF funding also has the potential to benefit arts and humanities 'down the line' as space is vacated by science researchers as they move into their new buildings. However, institutions are finding it difficult to identify the funds to refurbish this space to make it appropriate for subsequent use.

3.16 Two science research schemes – in Scotland and Northern Ireland – included some arts and humanities funding (these schemes totalled £90 million). A range of backlog maintenance/poor estates/Follett/restructuring funding applied to all research and teaching activities, some of which would have benefited arts and humanities research (these totalled £1.1 billion). Therefore of the total capital funds of nearly £4 billion, nearly 30% had the possibility of including arts and humanities research projects.

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3.17 However, there is no easy way to find out how much capital has actually been spent on projects specifically to benefit the arts and humanities.

Management of assets and infrastructure

3.18 The traditional model of research in the humanities implied little requirement for strategy or management. This has been reflected in a position where arts and humanities were often located in small and fragmented departments with relatively little opportunity or requirement for more systematic collaboration and management of their research.

3.19 The RAE is changing this, but the arts and humanities have not yet had the experience of the sciences in having large projects, competitive external funding and schemes like JIF and SRIF which effectively require them to adopt some of the disciplines of business planning. These include analysis of opportunities, identification of priorities, collaborative working, construction of business cases for investment, planning, project management. While not all academics may welcome this trend, it has clearly had beneficial impacts on the funding, reputation and outputs of science research, and on the confidence and ability of scientists to command much higher levels of external funding. This in turn has raised the status of scientists within the academic community: it has been remarked for example that senior officers of institutions are more likely to be from science than from the arts or humanities.

3.20 Those working in the arts and humanities need the same opportunities.

3.21 At the institutional level, the planning for, investment in, and management of research infrastructure has been a relatively undeveloped skill. The reasons for this are discussed in detail in the science report. They include the relative inadequacy of funding, but other cultural and environmental factors have contributed to the current position, including the following.

External (environmental) factors:

a. the capital funding of the HE sector;

b. funding policies encouraging marginal growth;

c. the significant number of 1960s buildings;

d. the poor estate inherited from local authorities;

e. the advance of sophistication of science and technology;

f. legislative requirements;

Internal management factors:

g. the high levels of staff costs in universities;

h. a relative lack of strategic financial and estates management;

i. poor management and costing information;

j. poor integration of academic strategy with estates and investment strategies.

3.22 Most of these factors have had an equal impact on the arts and sciences, and on teaching and research. However, additional factors may be considered to have particularly disadvantaged the arts and humanities, within the overall relatively poor record on investment in research infrastructure. These factors include:

- the lack of external sources of funding and the traditional humanities model of research discussed above have constrained the level of research activity and in particular the use of more expensive or specialist infrastructure;

- the small size of many arts and humanities departments and their relative inability to command a high priority within their institutions, partly because the laboratory-based subjects have had health and safety legislation and other external pressures. By contrast, arts and humanities subjects have been perceived to be 'able to cope' with more significantly sub-optimal infrastructure;

- Government policy has treated the arts and humanities differently from the sciences and social sciences and has not, until recently, recognised the scale of their relevance and contribution to national economic and social objectives;

- some short-term problems in recent years as a result of institutions struggling to find matching funds for JIF and SRIF projects in the sciences. These have had an adverse effect on the levels of investment that would otherwise have been made in teaching and in the arts and humanities.

Examples – extra pressures on arts and humanities

Institution R: Bidding schemes have led to opportunism rather than pursuit of a strategic direction. In fact, the requirement for matched funding has mitigated against pursuing strategic aims other than in JIF successful areas, as central capital funds are required for matching, and additional funds for LTM (long-term maintenance) will be needed. The greatest gap has been created in areas not eligible for JIF. With no other national source of funds, and consequently depleted sources of institutional funds, there has been no investment in arts and humanities.

Institution I: 'Arts and Humanities staff are much more likely than their science counterparts to inhabit less attractive and un-refurbished office space. (The case for refurbishment of science areas is often more pressing than that for office space for non-science subjects (health and safety, new equipment, etc.)'

Institution N is a research-intensive institution where 'Research accommodation has suffered (in Arts and Humanities) as what resource has become available has been channelled into Science... The fact that capital funding initiatives have excluded Arts and Humanities (particularly JIF/SRIF) has seriously affected capital funding within the University (for example, matching funding requirements have diverted potential capital investment into Science and Engineering).'

3.23 All this adds up to a picture where there is a very significant requirement for remedial investment across the whole higher education generic institutional infrastructure – but the arts and humanities are probably even worse off on average than the sciences. They have of course not benefited from any equivalent infrastructure investments to JIF and SRIF in the sciences.

4 Findings on infrastructure needs

4.1 This chapter reports on findings on the adequacy of the infrastructure for arts and humanities research, and the level of remedial investment required.

Categories of investment needed

4.2 In the 'Study of science research infrastructure', the investment needs for infrastructure were considered in five categories, as follows:

Remedial capital investment

- **Generic institutional infrastructure**
- **Well-found laboratory or equivalent**
- **Advanced or specialist facilities**

Recurrent investment needs – departmental funds etc

Forward investment – continuing needs for replacement and renewal

4.3 These headings apply equally to research in the arts and humanities, although some definitions differ. In assessing the total investment requirement for research infrastructure in the arts and humanities, the same categories have been used. Paragraphs 4.4 to 4.8 define the three categories of capital investment. The rest of the chapter addresses the five categories in turn.

Generic institutional infrastructure

4.4 This is the most significant element which, as for science research or for teaching, is a level of institutional infrastructure required to permit the appropriate level of arts and humanities research. The most essential requirement here is appropriate space and facilities, i.e. buildings; services; equipment; libraries and IT at the generic institutional level to a standard summarised in the science report (section 4.3.21).

Well-found laboratory or equivalent

4.5 The well-found laboratory is a discipline-specific requirement related to equipment and environments for research in addition to space and facilities provided as part of the generic institutional infrastructure. In the arts and humanities this includes theatre equipment, musical instruments, music technology centres, workshops, costumes, arts and craft materials, specialist IT equipment (but not PCs and recurrent departmental expenditure), archives or collections (but not general library contents).

4.6 Standard specification staff and student PCs and office equipment would normally be part of the generic institutional infrastructure.

4.7 Although humanities researchers often comment that 'the library is our laboratory', for the purposes of this report considerations of general research library and materials under generic infrastructure have been included. However,

specialist collections and services might be part of the well-found laboratory. There are other national needs in these areas as well, and they are covered in the third category.

Advanced or specialist facilities

4.8 This category comprises specialist research centres and facilities with state-of-the-art facilities which are usually too costly to be provided at departmental level, or from routine research grants or contracts. These will not exist in every research-active department or institution, but in a few national centres at the forefront of their discipline. The need for investment here can arise from different reasons:

- extending capacity in leading-edge departments to keep UK research abreast of international developments;
- national or regional facilities including, for example, archives – storage, digitising, and making material available for the international arts and humanities research community.

Generic institutional infrastructure

4.9 This is by a wide margin the most significant category in terms of funding requirement. Even in science research, where the other two categories are well developed and relatively well funded, the generic institutional infrastructure accounts for more than 80% of the total capital remedial investment needs. It is a relatively higher proportion for arts and humanities.

4.10 Most of the research at institutions for this study was therefore focused in this area. The process used was to seek evidence from institutions of the amount of funding that would be required to bring their generic institutional infrastructure to a level where they have:

- adequate and suitable space for staff and students engaged in research;
- buildings, plant and equipment that are in adequate condition; reasonably fit for purpose; and comply with basic legislative requirements;
- suitable institutional IT networks and equipment; i.e. with up-to-date equipment; adequate and expanding bandwidth; a minimum level of technical support;
- a library with some research materials; an adequate budget to purchase journals and books; access to other libraries where other research materials are available; adequate reading spaces and on-line facilities to support research staff and students.

4.11 The science report provides an analysis of the evidence on the state of the physical infrastructure in higher education, and on the levels of investment by institutions in recent years. This evidence highlights a serious problem of maintenance backlogs, of buildings which are not fit for purpose, and which do not meet legislative requirements.

4.12 The case studies revealed problems of under-investment in arts and humanities research in all of these areas. The most important areas in generic institutional infrastructure for the arts and humanities are:

space

- availability of space – the number one problem;
- quality of space;

libraries

- space, for readers and storage of materials;
- continuing availability (and maintenance of) research collections in major research libraries;
- on-line cataloguing (full disclosure) of all parts of an institution's collection;
- storage of library materials;

ICT

- increased demand for IT bandwidth – from increasing use of multi-media; and for software etc.

4.13 Each of these areas is considered below. The lack of large departmental budgets and dedicated facilities such as laboratories means that the adequacy of the generic institutional infrastructure is even more critical for arts and humanities research than for science. The case study discussions also identified an additional adverse impact on arts and humanities investment caused by the pressure to upgrade science facilities and, in recent years, the need to find matching funds for science research infrastructure projects.

Quality and availability of space

4.14 The case study institutions frequently commented that arts and humanities spend had suffered at the expense of science, with the matching requirements for JIF and SRIF. Many had explicitly sought to remedy this, with spend from their own resources. Institutions have been innovative and proactive in identifying other sources of funding for arts facilities, for example, National Lottery money, donations, and community and special heritage funding (such as 'Capital of Culture' funds) have contributed to academic space as well as to museums and performing arts facilities.

4.15 The main areas of concern were that poor quality of buildings, widely dispersed buildings and squeezed space did not allow the interaction between researchers and students, or fellow researchers, that is critical for effective arts and humanities research ('it is becoming increasingly difficult to sustain a sense of research community'). This was particularly the case in the humanities, and continued even where new space was becoming available.

Institution J: 'SRIF has allowed us to .. free up space for other activities, in particular to provide more and better accommodation for research postgraduates in the Arts/Humanities. But this space requires refurbishment.. Offices designed for individual scholarship by lone researchers in the 1960s and 1970s need restructuring to provide the kind of space needed for collaborative and team-based work by postgraduates.'

Institution E, one of the largest research institutions in the UK: 'opportunities for collaborative work .. have been severely limited by the lack of facilities and accommodation, particularly for postdoctoral research staff and postgraduate students.'

4.16 Lack of suitable dedicated rooms adversely affects research by inhibiting small group discussion. Other issues arose with new professors who required their own space ('we must give office space to someone with a British Academy award'); some departments cannot grow because there is just nowhere for new staff to sit.

4.17 Departments are increasingly being encouraged to work together, in either multi-disciplinary settings or in research centres. These are difficult to establish or to be effective if the departments and academics are widely dispersed across campus ('virtual research centres' seem more of the norm than actual physical co-location, even for part of the academics' time).

4.18 Graduate schools ('much more dedicated space for postgraduate research students') are perhaps the most strongly expressed requirement – as well as benefiting the postgraduate researchers, many consider these to be the catalyst for multi-disciplinary working, particularly in the humanities. They will also reflect the modern style of research – the use of advanced technology, video and sound.

Institution A is a Russell group institution, with strong research in arts and humanities (16 departments 5 or 5*). These departments desperately need a refurbished building. Rooms are currently dispersed and poorly signed. There is no central focus for humanities, so even the head of school does not know every member of staff. There are no multi-disciplinary areas which would add to the 'vibrancy' of research. A refurbished and reconfigured building would impact positively on both teaching and research – better located and provided teaching space; space for meetings on research and casual/social interaction.

Institution J is a small specialist arts college. On handover from the LEA the condition survey showed 90% in condition C, and 10% in condition D. Hunter funding totalled £300,000 to £400,000, on an estimated backlog of £15 million. Institutional managers have made their campus development plans their priority, whilst being innovative in engaging industry partners and seeking out alternative funding sources. The current estates condition is 80% in condition C, and nothing in condition D. The current strategy and investment will move them more towards their target of 25% in C in 10 years time.

In **Institution K** an archaeology department rated 5 is working in a suboptimal basement.

In **Institution H,** 'the levels of funding required to update and upgrade an existing gallery and performance space cannot be afforded from

standard income streams. These facilities were constructed in the 1960s and have seen little or no investment since – yet the university has the aspiration that they should form the base for developing research excellence in the contemporary visual arts.' A bid for Lottery funding for £3.5 million (in 1998) was unsuccessful because of changes in funding rules.

Institution N is a college of HE that has just built a new drama studio (poor estates funding) with adequate sound and lighting. However the room still needs seating. They also need a second rehearsal space (£0.6 million refurbishment), which they have included in a restructuring bid to HEFCE. Drama research is paper-based at the moment. If the institution had a second rehearsal room they could move into performance based research.

In the large research-intensive **Institution D**, space is the most urgent requirement. In classics (with successful external funding) there is no research centre, academics are sprinkled across the city and there is no faculty spirit, let alone discussion places with peers. History is in a listed building, 'designed to minimise usefulness as a Faculty centre', again with staff dotted around the university. Modern languages has no room for graduates; music has no proper performance space and no room for a modern electronic studio. The university is increasingly seeing the advantage of research centres, and recognises that more serious collaboration now needs to be carried out. This will require much less fragmentation of space, and closer working proximity.

In common with many research institutions, arts and humanities departments in **Institution K** are housed in old buildings 'not built for the purpose and expensive to redevelop'. In the faculty of humanities and social sciences in **Institution M**, 'one of the biggest problems faced by own faculty is lack of space – we occupy the same space as we did 15 years ago, despite significant growth on practically all indicators.' **Institution O** quoted an unfunded need of £2.0 million to provide language research facilities; £6 million to rehouse archives to acceptable standard; £5 million IT in arts and humanities; £2.5 million relocation/improvement of music.

Conversely, **Institution G** has, compared to the rest of the sector, a relatively generous amount of space – for example, all researchers have their own studios, on-campus, and do not generally share offices.

4.19 In the arts, space is important for studios (art and design studios, film and video suites, electronic music studios), exhibitions (sometimes multi-media) and for performance (rehearsal rooms, theatre, cinema, concert hall). Dedicated space is often important. Several institutions no longer had the performance space that they needed for practice-teaching, let alone practice-based research, as it was now used also for classroom teaching (with the rise in student numbers, and limited increase in space).

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Institution V is a small specialist arts college, that has experienced increased volumes with little increase in space. It has managed to provide a dedicated postgraduate building (converted house) with IT facilities, and social space. It is efficient in space use, academics do not have their own studios, entrance halls are used as exhibition galleries etc. However, its main (and only) hall is now doubling up as two seminar rooms/lighting studios; the partitioning, and alterations to paintwork (one dark, one white), have meant that it is no longer as suitable for use as a single theatre for planning theatre design and performances. Plans are in place to try to replace this facility, but the cost is £2-£3 million, and the tightness of research funding and absence of infrastructure funding is jeopardising this.

At another institution, dance studios are now being used for seminar rooms (classroom teaching). The mirrors and need for smooth flooring (furniture is now dragged over it) make joint use less than ideal.

4.20 As in teaching, little consistency was found in understanding the amount of space actually required for different functions. Do academics need their own offices? For humanities research, and for providing supervision and pastoral support to students it would seem that they do, but the reality is that this cannot be provided by the institution. Can rooms be joint use – for example, exhibitions in entrance halls; dance studios and classrooms; theatre space in the main university or college hall? Again, institutions endeavour to protect the quality of dedicated space, but space constraints have forced them to move perhaps too often to shared use. Many buildings also need to be reconfigured/refurbished to improve the use of the space that academics already have.

4.21 The questions continue. Do academics need institutional research space, particularly in the creative arts – for example, studios, pottery kilns and cutting equipment for fashion – when they have historically provided this at home (but as noted above with significant loss to their institution and colleagues)?

4.22 These issues deserve further work by institutions and the discipline associations as research in the arts and humanities develops a more mature research methodology and is thus better able to define standards and requirements for infrastructure. Each institution has its own characteristics, and the mix of factors affecting need in any particular case is complex. Overall, however, little difference was found in the levels of infrastructure gap between different types of institution.

Libraries

4.23 The changing role of libraries (particularly in terms of teaching), and the demands on library services from the increasing amount of information available and the increasing cost of acquisition, cataloguing and access, are covered in the science report (section 2.5). The escalating costs of serials has impacted particularly on arts and humanities, as science researchers are more able to supplement central spend (to some extent) with departmental funds, and are gaining some buffering in this respect with such web developments as pre-publication websites.

4.24 Academics and students in humanities, in particular, need to access original collections and archives. In many institutions this necessitates travel. In others, research is built around the collections the institutions hold, or academics create their own libraries. PGR students are often reluctant to travel (and students in some research institutions do not stay to carry out PGR if travel is a requirement).

Electronic digitisation of materials will assist, but will not resolve this ('Humanities researchers, in particular, also stress a vital need for conventional libraries of books and archives'). Digitisation will not, in any case, remove the need to store original material – archival permanence of digital material cannot currently be guaranteed.

4.25 Some collections may start to be dispersed, with no current academic researching in that area; or new archives cannot be purchased (the Chair of the Council of Deans of Arts and Humanities – CUDAH – reported that 'currently important collections are leaving the country because the UK has not got the resources to buy materials as they are released'). Gaps in national provision are of concern, together with changes in British Library collection policies and constraints on the major research institution budgets (particularly, for example, books in foreign languages).

4.26 Some of the answer must lie in improved access and collaboration, as recognised by the RSLG call for evidence (2001, see the science report, paragraph 2.5.18). Non-formula funding post-Follett (RSLP) has already assisted in cataloguing backlogs, converting catalogues, conservation, improving finding aids and extending opening hours. This 'Anderson' funding was continued in 1999-2001, again with a focus on the specialised research collections in the humanities. Funding was provided to support access, collaborative collection, humanities collections, and assist the retrospective conversion of catalogues.

4.27 Right of access, improvements in regional collections, and accessible information (catalogued, retrievable and digitised) will address the needs of many institutions.

4.28 However, even if improved access was available, many institutions have the perception that 'if we want to be taken seriously we must have a research library.' During the study some institutions specifically noted their need to address gaps in library stock where their research record was already strong, and where there was no direct competition from neighbouring 'old' universities. In any case, many institutions (pre- and post-1992) have special collections that need storage and preservation. Existing research collections may 'lie fallow' either through necessity (the institution just can't afford to continue to buy the level of books required) or through lack of research input (the post is vacant).

4.29 Amongst the most challenging issues for libraries funding in relation to arts and humanities are:

- to provide state-of-the-art facilities for special collections;
- to purchase paper-based material at the same time as electronic material (supplementing not replacing), and as volumes continue to increase in both, and costs rise (particularly in e-journals);
- storage of material. Most major research libraries face space and storage problems;
- to increase the amount of material on open access.

4.30 This last point would require:

- cataloguing (electronically) – the conversion of manual catalogue records, or the continued cataloguing of collections for the first time. This would

include working papers and other grey literature;

- digitisation of older research materials or special collections ('in humanities and social sciences, and more selectively elsewhere; for example, in maths, a key requirement is access to journals, series back-runs and newspapers. Digitisation in conjunction with enhanced searching technology has important potential here': librarian, Institution U);
- appropriate library environments (for example, research space).

> 'A key issue in today's environment is that many of our rare books and manuscripts and special collections are more in demand. Of course, most of us are trying to move towards digitising these collections, but the resources involved are considerable, and so true scholars – and increasingly younger scholars and students – need to be able to access the originals, which means that we need to create library reading room space which have proper environmental controls, etc.
>
> There needs to be targeted funding for a National Digitising Programme to digitise materials, particularly in the arts and humanities (and social sciences) which will then be available to researchers over the internet.'
>
> Librarian, **Institution H**

4.31 There are national initiatives in these areas, most notably the creation of national resources such as the DNER, and the RSLP (see the science report, paragraphs 2.5.16 and 2.5.20). Some type of distributed resource scheme might be a way forward (requiring purchase, access, preservation issues to be agreed). There are proposals for a National Union Catalogue, representing the holdings of all the major research collections across the UK, and including a National Serials Catalogue. Cataloguing of content could be further funded. Cataloguing existing materials (full disclosure) could easily cost £50 million (source, SCONUL). Digitising existing materials could absorb almost any sum of money available for this purpose.

4.32 The RSLG should assist in taking forward issues of access when it reports in 2002. Experience has shown, however, that 'for institutions holding large numbers of newly accessible collections the result has been a sustained increase in the level of demand from both within the institution and externally' (Institution U).

4.33 Institutions also see scope in national work in several areas, such as:

- co-operative acquisition and storage at regional or national level (which would remove uneconomic duplication between libraries of less rare, but low-use material);
- initiatives to help break the monopolies of publishers, including perhaps coordinated action to help remove the restrictive policies on publishers with respect to electronic access, which currently precludes joint library provision.

4.34 At a local (institutional) level problems of buildings have an equally urgent priority:

> **Institution G**: collections are not all catalogued, and even if they were, there is no room for visiting academics to view them for research in an appropriate environment. Similarly at **Institution J**, which has significant video collections but limited viewing space (although its two new Learning Resource Centres meet Follett and HEFCE norms).
>
> **Institution P:** 'As a research-led university, we also face a huge task in making adequate space available to house ever-growing collections of books, periodicals and manuscripts.'
>
> In **Institution B**, researchers travel to access other research libraries. This is generally acceptable, but not in humanities. They are losing PGR students because of their library resources. They have a new library building (funded through poor estates and, mainly, benefactions), but need £2.6 million to stock it
>
> In **Institution C**, a research-intensive institution, the arts and humanities 'no longer has a well-found research laboratory'. 'The' major project for fund-raising is a new arts and social science library. This would cost between £2 million to £30 million. It would allow a widely dispersed library provision to be centralised (with consequent cost savings), provide much needed storage, and would remove the main library from a 'widely despised' category C building.
>
> **Institution R**, another research intensive-institution, has a library built in 1959 for a student population then rising to 3,000. 'Although it is backed by a network of other newer libraries around campus, the main library now directly serves a clientele of some 12,000 staff and students... It is now completely unsuited to extended periods of concentrated research, with large volume of disruptive pedestrian traffic.. It is in urgent need of major refurbishment and modernisation: in particular, it cannot meet the technical standards set by the Historical Manuscripts Commission for an 'Approved Archival Repository' – a sorry state for a research library containing rich historical collections; it cannot meet the increasingly demanding requirements of disability legislation; its external fabric is in poor condition; and it cannot meet the exacting demands of English Heritage for a Grade 2* listed building.'

Information and communications technology (ICT)

4.35 The use of ICT in the arts and humanities has changed significantly over recent years. New fields of enquiry in art and design, film and media, have emerged, particularly in the post-1992 sector, aided by technological developments. Humanities research is becoming increasingly impacted by the wealth of research material that is now accessible electronically. Video and sound files require wide bandwidth to support them.

4.36 These developments are leading to increased demands on the ICT infrastructures in institutions. Collaborative research will only increase this further, as researchers will all need the capability to access the same material, work on it with hardware and software of similar high functionality, and communicate well with each other.

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Institution S (a post-1992 university), the Dean of Art and Design: 'Of all the faculties in this university we are the only one dealing with large media files, time-based media, and soon high volume streaming media. [Our researchers need this and] our graduates will work in a very different connected world. We need to position ourselves to be at the head of the game. We need 'fat pipes'. My advice is that we deliver a high data bandwidth faculty network as soon as possible.. Those of you who follow world IT trends will have seen reports on the very high bandwidth NET2 initiatives. NET2 is mainly a university and research net. In terms of [research], status and marketing, I predict a race between large art and design UK providers to connect with NET2.'

This was echoed by multi-faculty **Institution X**, whose SRIF spend will potentially impact on arts and humanities through funding IT bandwidth capability, but currently they cannot afford the links to the arts and humanities researchers.

Similarly, **Institution I**, which specialises in arts, humanities and social sciences, and where 'a specific difficulty at this time concerns the expense of electronic communication (for example, broadband) which is undoubtedly an impediment in the development of some research areas, such as design... Our local authority is seeking to ...create incubator units for R&D in arts industries and wants us as a cutting edge partner. The return to a national investment is immeasurable, and yet we are not able to contribute the necessary space or technical seed-corn at this time.'

Institution Z recently managed to upgrade its language laboratories, but anticipates a demand in the next few years for satellite transmission, real-time recording simultaneous translation equipment and broader bandwidth, at an unfunded cost of about £150,000. This will be used for teaching and research.

In **Institution J**, 'arts researchers increasingly use more and more technology. We have tried to protect individual workstations for staff research, although some staff need more sophisticated machines than we can regularly provide... To give a concrete example.. this year the Arts Equipment Committee could only cover two-thirds of bids... as a result a new shared initiative, the planned faculty resource room, which would largely help with staff research, could not be provided with all the equipment asked for; fewer new machines could be bought for research postgraduates (who regularly need more sophisticated machines than most staff).'

Generic institutional infrastructure – summary of need

4.37 The needs above are particularly acute for the arts and humanities which have relatively less dedicated research space and facilities. However, in principle, the issues are the same as in the sciences, and so this study adopts a common approach to estimate remedial investment needs, drawing on case study work.

4.38 This study includes data from 12 of the 18 institutions we visited (8 of which were research-intensive). From these it is possible to calculate the total capital

investment each needs to make in the short term (the next three to five years) to bring their buildings and services up to a level where:

- there is adequate space for the current level of work;
- no buildings are in maintenance condition categories C or D;
- all are fit-for-purpose i.e. functionally suitable; including appropriate estates rationalisation where necessary;
- there is no outstanding borrowing associated with these buildings;
- they comply with legislative requirements for health and safety and disabled access;
- the need cannot be met through known sources of external funding (public schemes and other funders) and internal funding (cash generated from surpluses).

4.39 For these 12 institutions, it is estimated that they need to spend on average 30-35% of their total insured asset value to achieve this condition. The estimates range from 45% to 5% (see paragraph 4.3.24 in the science report).

4.40 Extrapolating 30% across the whole sector, with an arts and humanities research buildings infrastructure of £1.6 billion (see paragraph 3.13), would lead to a whole sector required capital investment on generic institutional infrastructure of £0.5 billion.

4.41 This does not include the purchase, conservation, digitisation, or cataloguing of library or archival materials.

Well-found laboratory or equivalent

4.42 The well-found laboratory concept applies principally to those arts and humanities disciplines which have a requirement for particular specialist facilities in dedicated space. For example:

- art and design: studios, workshops for practice-based research for example, woodwork (for theatre design, fine art), foundry, clay mould making, plaster, metal model making, computer-aided design;
- fine art – digital media (editing, composing, digitising and network facilities); viewing facilities;
- performing arts – performance spaces such as rehearsal rooms; performance measurement and video equipment for dance;
- media studies – specialist equipment in film and digital production studios;
- photography – blackout rooms and equipment;
- music – instruments; rehearsal spaces; digital studios (recording and editing equipment);

- specialist IT systems and software (for example, for languages, linguistics, design);
- print studios (etching, silkscreen, computers);
- fashion – costume cutting and sewing.

4.43 Some of these disciplines require large performance spaces, such as a theatre or concert hall, and these have generally been included in generic infrastructure above.

4.44 Specific equipment needs are not limited to science and the arts; some humanities subjects need language laboratories, video recording, and the purchase, conservation, digitisation, or cataloguing of library or archival materials.

Examples

Senior managers in **Institution R**: 'There has not been the same level of understanding of the needs of arts and humanities research as there has been for science. It can be argued that the need for infrastructure in science can be met by big capital bidding schemes. The needs in creative and performing arts can be defined in similar terms.'

The Dean of Art and Design in **Institution S** described the needs of his discipline: 'There has been a fundamental revolution in arts and design as a result of IT (as significant as the printing press). Creative product design has always been an extraordinary British strength, but to remain a leading player we must invest large sums in powerful kit. The pay back (to the UK) will be very very significant... In the Far East, institutions have all the latest kit (donated by large corporations) but students don't have the creative skills to exploit it – yet – significant numbers of overseas students are coming here and taking skills back home to apply there where they have the technology'

The languages departments (rated 3a and 4) in **Institution Q** have a language centre built in the 1980s. The equipment is virtually defunct – they need more space, monitors, video equipment and monitoring to protect tapes. 'We are not talking about hundreds of thousands of pounds'.

In the same institution the music department was rated 3a, and they are trying to pick this up. The institution is appointing a professor and two new lecturers (the only alternative was to let music die completely). The department will need to convert rooms, and, depending on the research specialisms of the new staff, may need a digital music studio. In the past it 'just' had lone scholars looking at scores.

In **Institution H**, 'the equipment needs of art and design have continued to expand, both in extent and in terms of sophistication. Areas such as three dimensional design in wood, metal, ceramics and plastics and fashion and textiles now require sophisticated and expensive equipment, for which there is no current source of capital funding support'

> Computer needs are a problem in many institutions (see also ICT, above). A small arts and humanities research institution estimates that their current hardware and software under-investment might be in the region of £0.75 million, mainly comprising PCs for reader use in their (national) libraries **(Institution S).**

4.45 This need is not being met. At a national level, concern has been expressed by the Chair of the RAE Panel for Art and Design 2001:

> 'The unit of assessment as a whole has suffered serious consequences arising from long-term under-investment in basic infrastructural provision for research (such as accommodation, facilities and equipment). ... The panel was concerned to note that this problem has now reached a critical point whereby the performance of even 5 graded departments has been seriously compromised...The AHRB (funding) has not ameliorated the lack of basic research infrastructural support...
>
> This is turn has exacerbated a noticeable shift in the sector towards the humanities and away from industrially relevant research which had hitherto comprised a large volume of research activity, but which tends to be practice based and resource dependent...
>
> The lack of infrastructural support has compromised capacity to contribute to the UK economy and, in the design areas in particular, has impacted on the nation's industrially competitive position and cultural well being. Indeed within UK higher education a number of design areas are in decline, notably the areas of graphic, ceramic, glass, fashion and textile design.'

4.46 The well-found laboratory is not a precisely defined concept even in the sciences. The quantity and quality of facilities and equipment required in (say) physics depend on a number of factors including RAE ratings, the particular specialisms of the department, and the range of types of sponsor (what they expect, and what they will fund).

4.47 It is probably even more difficult to define in the arts, for the above reasons plus the fact that there are often fewer and smaller departments, and so less of a standard or norm which can be used in assessing infrastructure requirements. In addition many facilities in arts and humanities are used for both research and teaching.

4.48 It was difficult to obtain good estimates of the value of science research equipment in institutions, let alone for all other activities. Whilst values were obtained for some departments, these were not always high-quality estimates, and depended on the nature and field of research undertaken. They were also significantly affected by past institutional decisions on investment in new teaching programmes and areas of research, as well as facilities being shared between teaching and research.

4.49 JIF and SRIF have helped the sciences to define needs and to make a good case for investment. The arts and humanities have not yet had this opportunity, and it is therefore more difficult to make a realistic assessment of need.

4.50 As noted above, however, several disciplines have significant equipment needs. These vary depending on the field being researched (for example, in music the need might be in maintaining instrument quality and condition; keeping a digital studio up-to-date; or maintaining top-of-the-range PCs and a fully functioning computer laboratory). Institutions reported that the costs of arts research is significant, the same as any 'well-found laboratory' in science, but the departments have very limited access to traditional funding streams.

4.51 This has been partly ameliorated, particularly in the post-1992 universities, in cases where there has been a specific institution-funded investment in infrastructure in fields such as media, fashion and design, music technology. In part this has been to expand research in niches not currently occupied by pre-1992 institutions, and in part as a flagship project to proclaim the 'university' nature of the student experience, quality, links with the community and role in the region, etc.

4.52 Despite these examples of institutional-funded investment, there were as many cases where annual spend is not matching needs in the well-found laboratory and this will lead to backlogs.

4.53 There is further need arising from departments who carry out research (and teaching) in a discipline, but are unable to work in the fields that they wish – particularly digital technology and creative media – because they have been unable to fund the investment. This does, of course, raise issues about the spread and depth of research carried out in an institution. If there has always been a German professor, should this post continue (post-retirement), even if it is a department of one, with very limited funding? It may be better to focus on the strengths in the faculty, with a new appointment facilitating working in other fields. Few institutions have yet developed research strategies which address such issues.

4.54 Taking such considerations together, and extrapolating from the case studies and examples, it is possible to reach the following conclusion., While there is no objective way to assess need, it would be reasonable to identify an initial requirement for remedial investment in the well-found laboratory or equivalent of the order of £50 million across the HE sector. This would equate to approximately £3,000 per member of staff, and is 10% of the equivalent figure identified for the sciences (see the science report).

Advanced or specialist facilities

4.55 As in the sciences, there is a need for a few 'super-projects' which are analogous to some of the more ambitious science projects funded under JIF and which could be said to have a similar impact on the national research effort in the arts and humanities:

4.56 These could include:

- major libraries projects – to increase access to research materials by scholars across the UK;
- humanities centres in leading institutions (several 5* departments) where these departments are currently in scattered and unsuitable accommodation. These are analogous interdisciplinary research centres

to those which have been successfully created in the sciences, often using JIF or SRIF funds;

- major performance and creative arts facilities;
- storage and digitisation projects to provide a national research facility for UK scholars.

4.57 Some of these will also benefit teaching, and science research.

4.58 Examples of the type of building project that could be construed as advanced:

> **Institution Q**: 'The University Archive (which houses a variety of nationally important archival research resources) needs to be relocated from its home in a flour mill... A proper environment is mandatory and expensive: costs could range from £8 million (for the archive on its own) towards £20 million if a joint heritage research centre could be built bringing in the [named] gallery (which needs to be rebuilt) and stored collections from the [named] museums.' These costs would be partly funded from the sale of the site. Total funding required is therefore about £10 million.
>
> In **Institution K**, research centres are a key part of the research strategy. Managers have identified a £6.5 million development requirement for an institute of [language] studies combined with a [named] centre of poetry.

4.59 Other institutions suggested these types of research institute; often combined with an gallery or exhibition space to store and display the special collection around which the research would be based. There were surprisingly few 'big ideas' suggested by institutions. The pressing needs, of space, IT, support, time, and resource materials were of greater import to them. It is also true that researchers have not been encouraged to 'think big' (JIF provided this encouragement in science), and are only just starting to think about working in the type of research institutes that would feature under this 'advanced' category of investment.

4.60 If the English SRIF (only) was extended to cover arts and humanities (calculated on the same basis, i.e. on 1996 RAE results and income) additional funds of £47 million would be made available. A fund for the arts and humanities of the order of £100 million would therefore seem to be reasonable.

Recurrent investment needs

4.61 As well as these capital requirements, this study has identified recurrent needs in terms of the right level and type of support to academic staff (to permit adequate time for research); technicians and other support staff; departmental expenditure on minor equipment; maintenance contracts; travel; journals and books; conferences etc.

4.62 Research departments need:

- a culture which permits academic staff to have adequate uncommitted time for research, and which recognises the value of this;
- research students, and the facilities required to support them;
- funds available at departmental level which permit acquisition of a minimum of equipment (particularly PCs) and technical support; attendance at conferences; travel etc to enable staff to engage in research to a level where they can gain peer recognition and the prospect of some external funding.

4.63 Lack of sufficient time for academic staff to carry out research, and lack of funding for research students ('despite many strong candidates'), are two particular problems raised by a number of institutions – however, they are not part of the scope of this review, and they are not covered further in this report.

4.64 More generally, recurrent funds in arts and humanities departments have been squeezed by the recent years of efficiency gains in higher education. In many of the case studies institutions were suffering reduced research productivity as a result.

4.65 ICT support staff are difficult to fund – they can be difficult to find and keep at current salaries, and are often few in number. (Institution S: 'the key problem is in providing technical support to meet today's needs of modern researchers.' At another institution 'computer maintenance in the history department is done by the professor of mediaeval history'.)

4.66 All departments need relatively small (compared to science) amounts of spend on PCs, travel costs etc that will enable researchers to carry out their research. The case study institutions identified significant need in this area. Results from the Transparency Review identified that publicly funded research does not cover its full costs (see paragraph 3.3.8 in the science report) – in science research this is alleviated with income from consultancy, industrial research and short courses. There is much less scope for this income in arts and humanities disciplines, and what external funding exists is often used for 'buying out' staff time for research. There is often little cash available for supplementing research funding. Investment in the 'basic recurrent' items required for research is often tight (although this does not apply to all departments).

Examples

In **Institution R** 80% of its humanities budgets relate to staff. After space charging there is little left for spending on equipment (the School of Languages 'can't even afford to pay postage.')

In the arts school in **Institution G** (with a number of small departments, rated 3a and 4), a lot of IT equipment is outdated. Many staff are working on 386s and most machines are more than five years old. This is a particular problem for research staff. There is currently a moratorium on updating machines as the faculty has been in deficit for the last three years. (Staff are using the new PCs, provided to support the new accounting system SAP, for academic rather than administrative purposes.) Total equipment costs are about £200,000, with two-thirds in desperate need of updating. This is not a problem for classicists as much as historians, who need large databases.

In **Institution A**, the head of a 5* classics department, who has been recruited from a US Ivy League institution and has approximately 20 staff and 300 students, has a total annual budget of £13,000. He is considering having the telephones cut off to save money.

4.67 The shortfalls in this area vary greatly and a general figure could not be estimated. Funding activity closer to a full economic basis would enable institutions to remedy these gaps.

Forward investment – continuing needs for replacement and renewal

4.68 More generally, the sector needs to be funded, and to manage its infrastructure on a basis that is sustainable and in a way that will not lead to a recurrence of this level of deficit in investment. Over the long term, institutions should be investing approximately 4% of their insured asset value on an annual basis to allow for necessary renewal and replacement of buildings and equipment. (They need to plan to spend over 5% to take into account cost inflation.) Institutions are currently spending just over 50% of this required level (the science report, paragraphs 2.2.14 – 2.2.21).

Summary of capital investment needs

4.69 The total capital investment requirement could be seen as made up of three elements as discussed in this report (generic institutional infrastructure; well-found laboratory; and advanced infrastructure). The first two represent a remedial investment in buildings and equipment to bring them to a satisfactory condition to support modern research.

4.70 Using the same approach as in the science report, there is a combined requirement here of approximately £0.5 billion (this takes due regard of the rounding in the two figures of £0 5 billion and £50 million). This total can be compared with the equivalent investment of £3.2 billion identified for science

research infrastructure, and approximately £5 billion for teaching (the science report, paragraphs 2.2.32 and 4.3.28). These figures give a robust indication, at a sector level, of the level of need specifically for the arts and humanities proportion of institutional infrastructure. These are quoted at 2001 prices.

4.71 These apportionments are somewhat artificial since, for example, any remedial investment in generic infrastructure for teaching would also benefit research in the arts and humanities, and vice versa. Similarly, there will be synergies with investment in infrastructure for science research. It follows that investment in generic infrastructure should not be made in an isolated and ring-fenced way. The science report gives detailed suggestions about the type of strategic context for planning investment that institutions should preferably work within. In terms of arts and humanities research, investment plans should be set within a research strategy that considers, inter alia, research groups, multi-disciplinary research, and interfaces between science and the arts and humanities.

4.72 Eligibility for funding should include the whole spectrum of arts and humanities disciplines. Need for any one discipline will vary by institution, depending on the type of research they do, and the past investment they have been able to make. However, institutions are best placed to make these decisions, and should be funded, against appropriate strategies and plans, on a formula basis that recognises current institutional size and research strengths. This funding should cover buildings and associated services and facilities, including library buildings and IT networks, and the research equipment required to go in them, but not include staffing or the purchase of library material.

Advanced or specialist facilities

4.73 As discussed above, there is no ready method to provide an objective estimate of the scale of need. However, some comparison with the scale of JIF and SRIF for the sciences would be appropriate, and a small number of projects would fall within this category. It would be reasonable to provide a public scheme of a similar general nature to JIF (i.e. project-based and on a bidding rather than an automatic allocation basis) for new and advanced projects to enhance the arts and humanities research infrastructure.

4.74 A suitable level of funding for this would be of the order of £100 million, spread over five years. This would be approximately 10% of the scale of the equivalent investment in advanced science infrastructure made primarily through SRIF.

Appendix A

Terms of reference and advisory group

Terms of reference

The purpose of this study was to review the higher education infrastructure for research in the arts and humanities and in particular:

- to review the adequacy of university and college infrastructure to support research in the non-science fields;
- to define and measure the size of any investment gap in this infrastructure;
- to identify the factors which contribute to institutions' investment decisions in these areas and their relative importance;
- to make policy recommendations.

Advisory group

John Rushforth	Higher Education Funding Council for England
David Eastwood	Arts & Humanities Research Board
Tony Bruce	Universities UK
Professor Paul Slack	University of Oxford
Dr Frances Dow	University of Edinburgh
Professor Michael Worton	University College London

Appendix B
Report on responses to consultation

Introduction

JM Consulting undertook a consultation exercise as part of the review of research infrastructure which specifically included arts and humanities research. The consultation paper was sent to all heads of higher education institutions in the UK, a number of representative sector bodies, and other parties outside the HE sector, in September 2001.

In total 68 responses were received from 60 institutions and two representative bodies (three institutions submitted more than one response). Responses ranged from general overviews of less than one page, to several pages of analysis, some with supporting evidence.

This appendix summarises the themes to emerge from responses to the consultation exercise pertinent to arts and humanities research. These comments could be deemed to cover both science and arts and humanities research, unless stated. A full report on the consultation is given in Appendix B in the science research report.

1. Do you have an unfunded research infrastructure investment gap?

The investment gap is increasing rather than decreasing

Only one respondent – a specialist college undertaking limited research – did not feel their institution had a research infrastructure investment gap. Within this, the key themes to emerge were:

A national shortage of technical and support staff

This was the most frequently mentioned issue, with respondents claiming that a lack of appropriately skilled technical and support staff was, in many instances, compromising their ability to make the most effective use of their existing equipment. The problem was felt to be particularly acute in computing and for high-cost, specialist equipment, where people with appropriate skills could expect better pay and working conditions in the private sector.

The following quotes are typical:

> More full-time support staff are undoubtedly needed if the investment in complex IT equipment is ever to deliver properly in research terms.
>
> The impact of the RAE has been to drive institutions in the direction of recruiting outstanding academic personnel, hence leading them to commit a larger fraction of their staff costs to this category of personnel, and so away from support staff.

Lack of or inadequate space

Space was the next most frequently mentioned issue. The problem took several forms, ranging from an overall shortage of space (as a result of expansion) to spaces that were no longer felt to be fit for purpose. Where new space had been created using external funds (for example, JIF and SRIF for science), there was a concern that there was no funding available to renovate the old space, which meant that best use could not be made of this free space. There was a particular problem arising from the expansion of the sector in the 1960s and

1970s, with a lot of building stock of mediocre construction; poor design; and now nearing the end of its useful life and proving expensive to maintain.

The arts and humanities were felt to be particularly disadvantaged in terms of research space, as were new disciplines and interdisciplinary initiatives. In some institutions, the problem had reached a point where it was seen to be inhibiting the institution's ability to attract world class researchers; some went as far as to claim that they were losing their best researchers due to inadequate space and facilities. In the sciences, there was a tendency to suggest that it was easier to get funds for new developments than for refurbishment.

Typical quotes include:

> In circumstances where finding even one additional sub-standard room is difficult, it is impossible to plan for development and maintenance of our academic activities, some of which are of national strategic importance.
>
> this space requires refurbishment, particularly on the Arts/Humanities side, where offices designed for individual scholarship by lone researchers in the 1960s and 1970s need restructuring to provide the kind of space needed for collaborative and team based work by postgraduates.
>
> 75% of the synthetic chemistry research labs still have the same facilities as the day they were built in 1967. Most eight-person labs contain only two fume cupboards. To work in the safety required by today's legislation eight fume cupboard spaces are required.

Higher expectations

There was a suggestion that external funders – in particular, industry – have rising expectations concerning the quality of facilities they expect. Many expect state-of-the-art facilities and are updating their own facilities at a rapid rate. If HEIs cannot meet these expectations, they cannot expect to attract research projects from this sector, with many prepared to look overseas.

For example:

> Industry will, typically, invest to replace equipment in a five-year cycle. In order to remain internationally competitive, UK universities must do the same ..... but 20+ years of serious under-investment has depressed their baseline capacity too much for many to be seen as viable partners. Too many potential sponsors/partners presently regard too many UK universities as too poor relations to be worthy of partnership.

IT infrastructure

IT infrastructure was a frequently raised issue, with some institutions feeling it was no longer adequate to meet their needs. As well as the difficulty of attracting appropriately qualified staff in sufficient numbers, it was seen to be more difficult to attract external funding for large numbers of relatively inexpensive pieces of equipment.

The post-1992 universities

The post-1992 universities felt they had a particular problem, as they tended to be working off a much lower funding base, with little or no reserves.

2. (Consultation paper question 3) If the answers above relate primarily to science, could you please also comment on the arts and humanities?

> Humanities have simply not been perceived as having extensive or distinctive investment needs ..... Targeted investment funds like JIF and SRIF have either been designed in wholly inappropriate terms, or have in practice been virtually impossible for the humanities (and social sciences) to access successfully

This question received the least comment. This was often because institutions felt the underlying issues were not dissimilar for arts and humanities and for science. Many respondents also included social sciences in their responses to this question. Key points made are described below.

Narrowing gap between the needs of arts and humanities and science

There was some feeling that whilst the needs of much arts and humanities research are moving closer to those of science research – particularly in terms of IT usage – funding expectations and mechanisms do not reflect this. This hampers development and is a real constraint in many newer arts and humanities research fields.

Typical comments were:

> It is the case that increasingly scholars in these disciplines make heavier use of IT and work in teams.
>
> Areas such as three dimensional design in wood, metal, ceramics and plastics and fashion and textiles now require sophisticated and expensive equipment, for which there is no current source of capital funding support.
>
> In the technologically based areas of music and film and television, the costs are high and technical obsolescence is rapid.
>
> in the humanities in particular staff are putting in ever longer hours in order to fit in research time – that the RAE and institutional pressures result in academic staff exploiting themselves.
>
> Rapid changes in the style of research in the humanities, replicating some which have already occurred in the social sciences, demand a much greater investment by institutes in IT provision for the researchers using their facilities

Quality and volume of space

Many respondents to this question felt that arts and humanities researchers were more likely to be housed in inappropriate and dilapidated space than their peers in science. This was the result of a combination of factors, notably the increasing proportion of arts and humanities researchers working in teams; less stringent health and safety requirements; fewer opportunities for new build; and more restricted access to external funding.

Comments included:

> If the level of infrastructure funding were available, it would be possible to invest in humanities research facilities similar to those in the Netherlands, where large ICT complexes support experimental multimedia research into decision making, for example.

> Arts and humanities staff are also more likely than their science counterparts to *inhabit less attractive and unrefurbished office space.*
>
> Whilst we have world-class facilities in some areas of science/technology, these are contrasted to those literally crumbling before our eyes in other areas.

Absence of a Research Council

The AHRB was seen to have performed well in the context of the funds available to it. However, a commonly held view was that it should be upgraded to Research Council status and funded accordingly. This would be a more accurate reflection of the importance of arts and humanities research to the national economy. Funding shortfalls were seen to be particularly acute in new research areas and in interdisciplinary research.

Libraries and archives

Libraries are commented on separately at the end of this appendix. It is worth noting here that whilst research in all disciplines required good library facilities, arts and humanities was sometimes felt to have additional library requirements, such as archiving and digitisation costs.

For example:

> All our departments agree that enormous pressure has fallen on the research component of our library, but this difficulty has a far higher profile in social sciences, arts and humanities.
>
> Most scientists do not care where information comes from provided it is delivered electronically to their desktop. For humanities scholars the library *itself* is regarded as their 'laboratory'.

3. (Consultation paper question 5) How serious is the remaining investment gap?

> Without a major capital investment we are facing the collapse of significant parts of our infrastructure.

The overwhelming majority of responses to this question ranged from 'serious' to 'critical to the point of affecting international competitiveness'. Whilst the problem had its roots in history, those who commented on it tended to feel the gap was getting wider rather than reducing. What respondents saw as the key implications of this gap are summarised below.

Compromising ability to contribute to the national economy

There was some feeling that institutions and their academic staff were frustrated by their inability to contribute to the local, regional and national economy as effectively as they might. This view was most strongly expressed by the post-1992 universities.

For example:

> The lack of infrastructural support has compromised capacity to contribute to the UK economy and, in the design area in particular, has impacted on the nation's industrially competitive position and cultural well-being.

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> The growing importance of the creative and cultural industries to the UK economy is now well-recognised – but not translated into research infrastructure investment decisions.
>
> The Prime Minister has claimed that there will be an increase in the global market for environmental goods and services of £800 billion by the end of the decade. He also wishes the UK to be able to play a leading role in the exploitation of this market ..... It would be perverse if under-investment in this area of research continues.

Implications for teaching

The view was expressed that good research underpins good teaching. When research in certain subject areas and institutions is under-funded, there is a knock-on effect on all students and on the HEI's ability to fulfil its 'mission'.

Comments included:

> Given that research is meant to underpin good teaching, under-investment in parts of the sector relegates some HEIs to positions that are unsustainable.
>
> The university views the enhancement of its research capability, and the further development of research underpinning its teaching provision, as a fundamental strategic objective vital to the academic health of the institution.

Inhibits the development of 'new' areas

New areas of research often require new infrastructure. When there is a shortfall in servicing the needs of existing research, it can encourage institutions to 'play it safe'. It is harder for them to justify taking a decision that may bring long-term benefits at the expense of more immediate 'needs'. However, if these decisions are not taken, the UK will not be able to remain at the leading edge. There was some concern that interdisciplinary research might suffer disproportionately.

Typical quotes were:

> the present dual-support system for research funding tends to be highly conservative, encouraging the status quo, but more seriously inhibiting new developments. .... that will in time generate the innovations in industry and public services on which economic and social progress and development vitally depend.
>
> the unmet need for significant investment in enhancing our information technology infrastructure is inhibiting research activity in new fields, particularly in the biosciences.

Staff retention

Adequate research infrastructure, alongside remuneration, was seen as important in retaining researchers and support staff. With many larger private sector organisations – and to some extent, the NHS – now offering attractive alternatives, it is increasingly difficult to recruit and retain both researchers and technical support staff. There was also a suggestion that researchers who did want to work in an HEI were being enticed overseas in increasing numbers.

Comments included:

> Lack of research infrastructure will make it increasingly difficult to retain research staff. Evidence from data on the destinations of researchers completing fixed term contracts suggests that many researchers are now leaving the UK. Staff, particularly in computer sciences and manufacturing engineering, show a strong preference for posts in business or abroad, rather than work in under-resourced university research units.
>
> We are concerned over our ability to attract and retain high grade technologists and engineers. Science today demands managers and technologists who are able to run the sophisticated facilities provided by JIF and SRIF.

International competition

Research infrastructure has to be assessed in the context of the international situation. There is a perception (most notable in the research-intensive institutions, although apparent across a broad range of respondents) that the UK is losing ground here to the US and to some European countries. It is perceived that this influences the UK's ability to attract the best students, as well as the best research staff.

Comments were made along the following lines:

> It is now increasingly recognised that research students require their own individual space, and that they also require dedicated social space in which they can interact with one another to discuss and develop ideas. Here UK universities fall badly short of what is provided by our competitors abroad, particularly in the United States and Australia; competitors that are attracting graduates who would formerly have come to Britain.
>
> charitable or commercially related medical research has some risk of being transferred out of the United Kingdom. The international market is distorted by the variable desire of governments to support research infrastructure and this could put the UK at a disadvantage.
>
> The difficulty we experience in attracting staff of the right calibre from, say, mainland Europe, or the USA, is not primarily one of salary but of the capital support we can(not) afford.
>
> The best measure ... is perhaps the loss of attractiveness, as a locus for research, to leading scholars in the humanities, from whatever part of the world they may come. If libraries and other facilities are not maintained and well-serviced, and housing is beyond their reach, they will go elsewhere: notably to the United States.

Space that is unsuitable for current needs

Not only is space at a premium, as research has expanded more rapidly than the space available to accommodate it, but also the space that is available often reflects outmoded needs. As more researchers work in teams and across disciplines; health and safety requirements tighten; and technical infrastructure assumes growing importance, this problem is likely to worsen.

For example:

> The principal requirement, however, is for space, because without it not much else can be done: space that is properly designed for the research needs of the next few decades, rather than for the teaching needs of the 1960s.
>
> Hardware and software are usually available, but the facilities for making the best use of them are not.
>
> For example, even though the university is about to embark on a major redevelopment of one of its campuses ..... it has not been possible within the given financial constraints to do anything other than plan provision for existing levels of teaching, research and administration, despite the university policy to expand research.
>
> There is evidence that space and library support issues already affect productivity of research staff and result in greater staff turnover.

Libraries

Libraries and library funding were seen to have particular issues by many respondents. These arose from a combination of rising student numbers; an increasing number of publications; price rises well in excess of inflation; the introduction and growth of electronic information systems; a chronic shortage of space (in some cases meaning materials have to be jettisoned to accommodate new ones); high storage, conservation and archiving costs; staff shortages; all combined with static budgets. The perception is that the problems have reached a point where this can be considered 'a national crisis'.

> All departments agree that the under-investment in the library is serious. The rapid rise in costs of research materials (well beyond inflation), the squeezer on funding arising from the under-funded expansion of student numbers, with its resulting demands on library facilities, and the rapidly expanding range of materials needed are in our opinion creating something of a national crisis. The mirages of solutions in the future (digitisation, electronic access, collaborative deals, action to reduce prices) can have the effect of diluting the library case.
>
> [a library originally built to cater for 3,000 students] the main library now directly serves a clientele of some 12,000 staff and students, with an average of 6,000 individual visits per day during semester. It is now completely unsuited to extended periods of concentrated research, with large volumes of disruptive pedestrian traffic at lecture changeover times.

There is believed to be a lot of printed research material in libraries that has not yet been catalogued on-line, and this also restricts access. A major national investment will be required to convert card catalogues, and this should include archive material.

> There is a significant investment gap to be filled in order to enable libraries to bridge the 'hump' as electronic formats gradually take over from print as the *primary* (but not the exclusive) delivery medium for scholarly communication.

Budget pressures are also creating problems for institutions that have collections of rare and archive material of national importance, which struggle to meet conservation costs.

At a time when researchers' (and students') expectations of library facilities are rising, libraries are able to deliver less. If libraries are to fulfil this role, as well as space and investment, other requirements include:

- more subject specialist staff;
- more regional networks that allow for research specialisation within institutions;
- different types of space to accommodate different users.

Glossary

AHRB
: the Arts and Humanities Research Board

arts and humanities
: definitions of these subject areas are given in chapter 2

cost adjustments
: adjustments to institutions' published financial results as required by, and defined under, the Transparency Review. There are three adjustments – infrastructure; cost of capital employed (COCE); and exceptional items.

DNER
: Distributed National Electronic Resource – networked materials available for teaching and research. JISC aims to develop the DNER in a coherent way; to promote the use of appropriate standards, and to support a national framework to ensure unified integrated access to all forms and sources of the material.

EMS
: Estates Management Database

FE
: Further education

fit for purpose
: as defined for the EMS database, with condition classified into four categories: A, B, C and D. Condition C is buildings which are operational, but with major repair or replacement needed within three years; Condition D is buildings which are in an unacceptable or inoperable condition

full costs/full economic costs
: the full economic costs of an activity or project. This is the total of direct costs and indirect costs, and the inclusion of economic charges for an appropriate share of infrastructure and capital

funding councils
: HEFCE, Scottish Higher Education Funding Council, Higher Education Funding Council for Wales and the Department for Education and Learning, Northern Ireland

HE
: higher education

HEFCE
: Higher Education Funding Council for England

HEIs

higher education institutions comprising universities and colleges of higher education

HESA

the Higher Education Statistics Agency. The HESA FSR is the Financial Statistical Record, a published database of financial information on HE

infrastructure

used in this report to mean the physical infrastructure of an institution – buildings, plant and associated mechanical and electrical services, equipment, IT, libraries and related information resources. The main focus is on capital expenditure, but recurrent expenditure in terms of maintenance, library materials, IT and technical support staff and services is also considered

IT, ICT

information technology, information and communication technology (these are synonymous in this report)

JANET

Joint Academic NETwork. The UK's education and research network, linking all FE and HE institutions, Research Council sites and other bodies with a legitimate interest in working with the further and higher education and research community

JISC

Joint Information Systems Committee

JIF

Joint Infrastructure Fund

JREI

Joint Research Equipment Initiative – see Appendix C of the science report

Learning resource centres

buildings in HEIs encompassing libraries and other information services, and including some PC provision

maintenance (spend)

expenditure on maintenance, as defined for the Financial Statistics Return (HESA) i.e. spend which is not capitalised in institutions' financial statements

NHS

National Health Service

non-publicly funded (NPF) activities

the non-publicly funded activities of HEIs, comprising NPF research (UK charities, European and overseas governments, industrial and commercial sponsors); NPF teaching (student teaching not partly or wholly covered by a government grant –

whether higher education, teacher training, further education, or nursing); and Other activities

Other activities

a term used to describe all primary activities in an institution other than Research or Teaching, as defined under the Transparency Review (it is not the same as Support, which is separately defined under the Transparency Review)

PF activities

publicly funded activities as defined under the Transparency Review. These include research funded by institutions, research councils, funding councils, UK government, and the European Commission; and all teaching which is funded (to some extent) by government (including HE, FE, teacher training, nursing etc)

PGR

postgraduate research students

QR

the quality-rated element of HEFCE's research funding.
Over 90% of research funding allocated by the funding councils is distributed selectively, according to the quality of research measured. This QR element is allocated to institutions on the basis of research volume multiplied by quality multiplied by cost weighting Volume and quality are assessed through the RAE. Part of the volume element is also allocated to institutions on the volume of their charity-funded research

RAE

Research Assessment Exercise.
A periodic assessment of the volume and quality of research, undertaken by the funding councils. The staff working in each field (unit of assessment) in an institution are then awarded a 'rating': 3b, 3a, 4, 5, 5*. The results of the latest RAE were published in December 2001, although all references to ratings in this report refer to the 1996 RAE

Research (R)

as defined under the Transparency Review – based on the Frascati definition of research

Research Councils

Engineering & Physical Sciences Research Council, Particle Physics and Astronomy Research Council, Biotechnology and Biological Sciences Research Council, Medical Research Council, Natural Environment Research Council and Economic & Social Research Council

research-intensive institutions

25 institutions account for 70% of research income in the sector. They are listed in Appendix A of the science report

RICS
: Royal Institute of Chartered Surveyors

RSLG, RSLP
: Research Support Libraries Group, Research Support Libraries Programme

Russell Group
: a subsection of the most research-intensive institutions in the sector

the science report
: 'Study of science research infrastructure' published March 2002 by the Office of Science and Technology (see www.ost.gov.uk)

SCONUL
: Society of College, National and University Libraries

SRIF
: Science Research Infrastructure Fund

Support activities
: activities in support of Teaching, Research and Other activities, as defined under the Transparency Review

Teaching (T)
: a term used to describe all teaching activity, as defined by the Transparency Review

Transparency Review
: as part of the sector's accountability to Government, and to enhance their internal costing information, every institution is reporting annually to Government the costs of Teaching (T), Research (R) and Other (O). T and R are categorised into publicly funded activities (PF) and non-publicly funded activities (NPF). The information is being prepared in a robust way according to a detailed methodology as published by the Joint Costing and Pricing Steering Group (JCPSG July 2000: Transparent Approach to Costing). This required all academics to complete time allocation schedules; for indirect cost rates to be established on a consistent and auditable basis; and for the reported costs to include 'cost adjustments' relating to cost of capital employed (COCE) and an infrastructure adjustment

well-found laboratory
: A discipline-specific requirement related to equipment and environments for research in addition to the space and facilities provided as part of the generic institutional infrastructure. In the arts and humanities, this includes theatre equipment, musical instruments, music technology centres, workshops, costumes, arts and craft materials, specialist IT equipment (but not PCs and recurrent departmental expenditure), archives or collections (but not general library contents)

universities

the term universities in this report is deemed to cover both universities and colleges of higher education

UoA

Unit of Assessment. A subject or discipline group used in the Research Assessment Exercise

Universities UK

- Previously the Committee of Vice-Chancellors and Principals. In this report Universities UK is generally deemed to cover both Universities UK and SCOP

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